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FOOD ENGINEERING

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FOOD ENGINEERING

ABOUT THE COVER

Managing a new plant construction project or retrofit is no easy task. But good management is essential to a successful project and improving the plant's bottom line. Photo: Tropicana Plant courtesy of Sverdrup.

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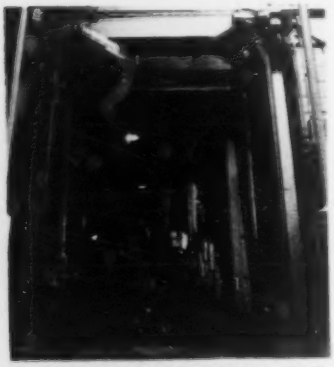

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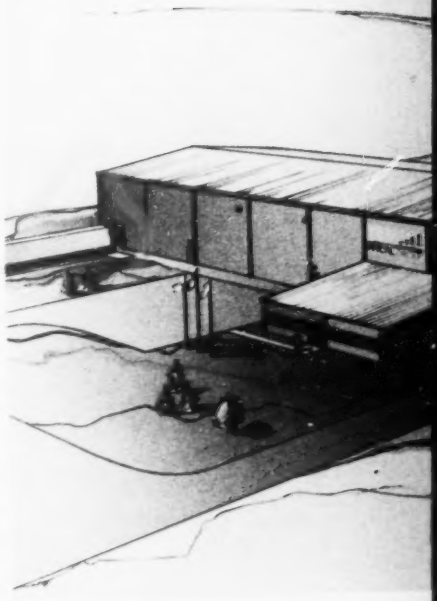
14th ANNUAL NEW PLANT CONSTRUCTION SURVEY

Entrepreneurs break ground in food plant construction survey.

PATRICIA DILLON
SENIOR ASSOCIATE EDITOR

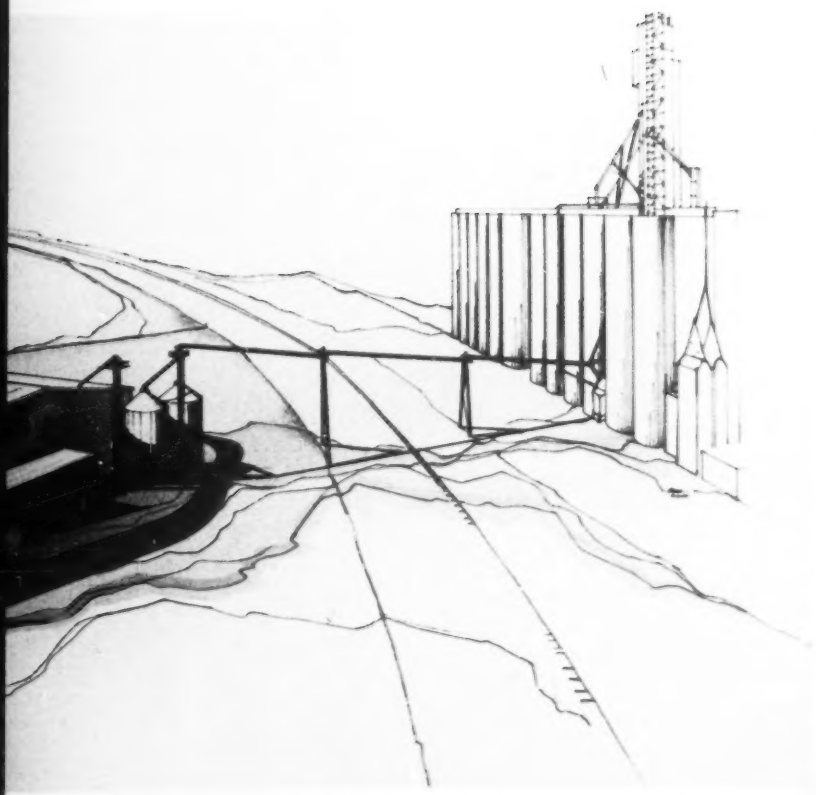


Food Engineering is breaking with tradition by publishing our widely-read annual new plant survey in April rather than in November. However, next year's survey will take in all of 1991. As in past years, our current results pooled information from Conway Data, Inc., Norcross, GA and mailed surveys we sent to architectural/engineering firms.

A total of 202 projects were either built, expanded or renovated during the six month period from July 1 to December 31, 1990. Just over half were renovations, continuing a small but noticeable trend towards renovation, a response to the recessionary climate.

Specialty and ethnic foods, many of which had humble beginnings, made impressive inroads into mainstream food manufacturing. Some entrepreneurs literally breaking ground to

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
			A					
A.M. Gilardi & Sons	Oklahoma City, OK	Frozen pizzas	New	65	–	170	–	–
Adair Foods Co.	Kirksville, MO	Ham products	Exp.	40	3	100	–	–
Adolph Coors	Burley, ID	Barley storage	Exp.	–	–	7	–	–
Albertson's Inc.	Brea, CA	Grocery	Exp.	123.5	–	–	A. Epstein & Sons, Int'l.	–
Allen Canning Co.	Turkey, NC	Canned vegetables	New	200	–	60	–	–
Ambrosia Chocolate	Milwaukee, WI	Chocolate	New	320	93	350	Jones Group Lockwood Greene Davy McKee	Comp. 6/92
America's Catch	Itta Bena, MS	Catfish	New	–	1	–	–	–
American Home Foods	Milton, PA	Food	New	–	20	–	–	Comp. Winter
American Italian Pasta Co.	Excelsior Springs, MO	Pasta	Exp.	--	–	50	–	–
Americold	Tomah, WI	Refrig. warehouse	New	110	–	–	Stellar Group	–
Anheuser Busch	Tampa, FL	Beer	Exp.	47	45	49	Lockwood Greene	Stup.
Anheuser Busch	Cartersville, GA	Beer	New	860	250	500	MK-Ferguson	Const. 3/92



build new plants: Ruiz Foods won recognition from the Reagan administration as exceptional minority entrepreneurs; Mama Tish Italian Specialties' 23-year old president Andy Zahn bought the firm in 1989 with annual sales of $800,000 and now boasts of sales over $7 million; and Ms. Desserts, a company founded by Dean Kolstad who later went into partnership with Gary and Jeff Peisach to make its first gourmet desserts in the kitchen of a college frat house. These success stories illustrate that the food industry is not exclusively the domain of gargantuan conglomerates, but a proving ground for upstarts who can make their mark by building their own food plants.

In the final column of the following tables, project status and dates are coded as follows: Plng. (site selected but construction not yet underway); Const. (construction underway); and Stup. (actual or projected startup date). ▲

Nichii Co. is building a soybean flake processing facility in Jefferson, IA. (Source: Austin Co.)

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
Anheuser Busch	St. Louis, MO	Exp.	259	–	259	–	MK-Ferguson	Cont.
Anresco Inc.	San Francisco, CA	Exp.	3	–	25	–	–	Stup. March
Assoc. Grocers	Miami, FL	Exp.	80	–	–	–	Stellar Group	–
Archer Daniels Midland	Champaign, IL	Masa (corn prod.)	Exp.	50	–	40	–	–
			B					
B.C. Rogers Processors	Morton, MS	Poultry	New	–	–	550	–	–
Bakeline, Inc.	Des Plaines, IA	Warehouse	Exp.	115	5		A. Epstein & Sons, Int'l.	–
Bama Foods	Tulsa, OK	Bakery prod.	New	135	40	100	Lockwood Greene Webber/Smith	Comp. 7/91
Barber's Dairies	Birmingham, AL	Milk	New	40	–	–	Webber/Smith	Stup. March
Beatrice/Hunt-Wesson	Memphis, TN	Vegetable oil & shortening	Exp.	–	1.1	50	–	–
Ben & Jerry's	Springfield, MA	Ice Cream	New	35	–	–	Webber/Smith	–
Beverage Concepts	Saint Louis, MO	Wine & beverages	Exp.	–	1.5	25	–	–

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
Big Bear	Wapakoneta, OH	Groc. dist.	New	500	–	–	Hixson	–
Blue Bell Creameries	Brenham, TX	Ice cream	Exp.	21	–	–	–	Comp. Spring
Borden	Texas	Milk	Exp.	12	–	–	Hixson	–
Borden	Cape May, NJ	Seafood	New	58	15	–	Hixson	–
Borden	St. Louis, MO	Pasta hyperplant	New	–	50	200	–	Comp. '92
Borden	St. Louis, MO	Foodservice	New	–	20	400	–	Comp. '92
Borden	Chambersburg, PA	Foodservice	New	400	25	–	Ruscilli Const. Jacobs Engr.	Comp. '91
Bruno's Inc.	Birmingham, AL	Dist. ctr.	Exp.	365	–	–	Food Plant Engineering	Stup. March
Burris Refr. Serv.	Chesapeake, VA	Warehouse	New	300	–	–	Stellar Group	Comp. July
		C						
C&C Meat Sales	Upper Marlboro, MD	Meat dist.	New	18	–	50	St. Onge, Ruff & Assoc.	Stup. 11/90
Camino Real Foods Inc.	Lancaster, PA	Froz. burritos	New	65	10	72	Kajima Int'l.	Comp. Aug.
Campbell Soup	Camden, NJ	Soup	Exp.	90	24	–	MK-Ferguson Sigel Group & Ballinger	Stup. March
CapriSun	Granite City, IL	Soft drinks	Exp.	24	3	–	–	–
Cargill	Dodge City, KS	Beef slaughter	Exp.	–	–	–	–	Comp.'91
Cargill	Jacksonville, FL	Poultry	Exp.	–	8.3	–	Haskell Co.	Comp. '92
Cargill	Fort Morgan, CO	Beef slaughter	Exp.	–	24	200+	–	Comp. '92
Cargill	Memphis, TN	Oil	New	–	–	–	–	Comp. '91
Cargill	Schuyler, NE	Beef slaughter	Exp.	–	–	–	–	Comp. '91
Cargill	Stockton, CA	Flour	New	–	–	–	Younglove	Const.
Carnation Company	Danville, VA	Pasta & sauce	Exp.	–	20	–	–	Comp. Spring.
Carnation Company	Modesto, CA	Evap. milk	New	125	–	60	–	Stup. Sept.
Cinpac	Cincinnati, OH	Prepared meals	Conv.	180	–	–	Hixson	Const. June
Clements Foods Co.	Oklahoma City, OK	Condiments	Exp.	25	–	15	–	–
Clover Stornetta Farms	Petaluma, CA	Milk	Exp.	40	–	22	–	Comp. March
Club Chef	Cincinnati, OH	Produce	Exp.	–	–	–	Hixson	Const. June
Coca-Cola	Jackson, TN	Soft drinks	New	45	–	–	–	–
Coca-Cola	Central Florida	Juice concentrate	Exp.	32	–	–	Webber/Smith	Stup. Dec.
Coca-Cola	Milwaukee, WI	Soft drinks	New	368	–	40	–	Comp. June
Coca-Cola	Sacramento, CA	Dist. ctr.	New	303	–	–	Food Plant Engineering	Stup. Nov.
Cole Grains (Nutrix)	Muskogee, OK	Dog/cat food	Exp.	–	–	100	–	–
Colonial Sugar	Gramercy, LA	Molasses	New	–	–	–	PSI	Comp. 8/90
Columbia Foods	Columbia, MO	Sausage	Renov.	60	–	–	Sverdrup	Stup. May
Complete Pkg. Service	Austin, MN	Wet & dry pak	New	100	2	60	–	Comp. Feb.
Continental Freezer	Chicago, IL	Froz. dist.	Exp.	86	–	–	Webber/Smith	Comp.
Coors Brewing Co.	Memphis, TN	Carbonated juice	Exp.	–	90	–	–	–
Coors Brewing Co.	Memphis, TN	Beer	Exp.	–	50+	250	PSI	Const. 11/90
Crestwood Int'l	Mocksville, NC	Chicken processing	New	–	1	–	–	–
Custom Food Processors	Blue Earth, MN	RTE cereals & snacks	New	30	2.1	80	–	Comp. April
		D						
D-D's Country Muffins	Chaska, MN	Frozen bakery prod.	New	33	1.3	–	–	–
Dairylea Co-op	De Witt, NY	Milk products	Exp.	–	1.1	–	–	–
Dairylea Co-op	Oneida, NY	Milk products	Exp.	20	–	100	–	–
Dairymen's Creamery Ascn.	Boise, ID	Ice cream	Exp.	20	–	–	Mead & Hunt	Comp. Oct.
Drake Bakeries	Wayne, NJ	Snacks	Renov.	–	4	–	EI Assoc.	Ping.

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
Damani Foods	Bloomsburg, PA	Pasta	Exp.	100	40	400	Lockwood Greene	Plning.
Delta Beverage Group	Columbus, MS	Distribution center	New	–	2	–	–	–
Del Monte	Port Manatee, FL	Chilled warehouse	New	58	4	–	Edifice Corp.	Comp.
Del Monte	Savannah, GA	Dist. ctr.	Renov.	60	3	–	St. Onge, Ruff	Comp.
Dole Food Co.	Bakersfield, CA	Carrots	New	60	8	125	Foodpro Int'l.	Comp.
Durkee French Foods	Springfield, MO	Mustard	Exp.	–	–	60	–	–
F								
Fairfield Farms	Hanover, MD	Froz. Soups	New	80	11	–	Webber/Smith	Stup. June
Farm Fresh Dairy & Bakery	Chandler, OK	Whey processing	Exp.	35	–	21	–	–
Feather River Foods	Maryville, CA	Fruit	New	35	7	50	Foodpro Int'l.	Comp.
Flowers Baking Co.	Bradenton, FL	Bakery products	Exp.	100	5	100	–	–
Foremost Dairies	–	Dairy proc.	New	–	30	–	–	Stup.
Forest Packing Co.	Forest, MS	Poultry	New	–	3	–	–	–
Foster Farms	Fresno, CA	Chicken processing	Exp.	150	25	1000	–	–
Freeze Pt. Storage	Manteno, IL	Refrig. warehouse	Exp.	50	–	–	Stellar Group	–
Frito-Lay	Irving, TX	Snack foods	Exp.	–	1.5	–	–	–
Frito-Lay	Mount Kisco, NY	Potato & corn chips	Exp.	22	–	–	–	–
Frito-Lay	Jackson, MS	Snack foods	New	–	2.4	–	–	–
G								
General Foods	Jonesboro, AR	Cereal	New	230	–	–	A. Epstein & Sons, Int'l.	–
General Mills	Saint Charles, IL	Cereals	Exp.	–	3	–	–	–
Golden Poultry	Tuscumbia, AL	Broiler feed	–	–	3	–	–	–
Gordon Foodservice	Grand Rapids, MI	Foodservice dist.	New	225	34	–	Webber/Smith	Comp.
H								
Heiner's Bakery	Huntington, WV	Breads & buns	Exp.	–	5.5	–	–	–
Heinz Pet Foods	Bloomsburg, PA	Pet food	Renov.	100	40	12	Lockwood Greene	Const.
Heller Seasonings	Modesto, CA	Food seasonings	New	40	–	–	–	–
Hershey Foods	Derry Township, PA	Chocolate	New	130	100	60	Sverdrup Ballinger	Const.
Hill's Pet Products	Richmond, IN	Pet food	New	205	–	–	A. Epstein & Sons, Int'l.	–
Holly Farms of Texas	Center, TX	Chicken processing	Exp.	40	–	–	–	–
Hunter Jersey	High Point, NC	Milk & ice cream	Exp.	–	2.5	–	–	–
I								
IBP	Madison, NE	Meat processing	Exp.	–	20	150	–	–
IBP	Dakota City, NE	Meat processing	Exp.	–	10	100	–	–
International Cargo	Jacintoport, TX	Refrig. Dist.	New	240	–	–	Stellar Group	–
International Cargo	Barbours, TX	Refrig. Dist.	New	150	–	–	Stellar Group	–
J								
Jasper Popcorn Co.	Jasper, MO	Popcorn	Exp.	–	1	40	–	–
John Morrell & Co.	Sioux Falls, SD	Smoked meats	Exp.	–	–	300	–	–
John Morrell & Co.	Wilson, NC	Meat processing	New	–	–	350	–	–

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
K								
Kellogg Co.	Omaha, NE	RTE cereals	Exp.	–	20	–	–	–
Karlshamm's	Columbus, OH	Oils	New	–	–	100	PSI	Stup. March
Keebler Co.	Denver, CO	Warehouse	Exp.	46	8		A. Epstein	Stup. 11/90
Key Technology	Walla Walla, WA	Food	New	151	–	280	–	Stup. 10/90
Kraft General Foods	Humboldt, TN	Non-dairy cheese	Exp.	12	3.1	20	–	Comp. June
Kraft General Foods	Walton, NY	Cottage cheese	Exp.	10	–	–	Webber/Smith	Comp.
Kraft General Foods	New Sewlicky Twp., PA	Food products	New	188	8	105	–	–
L								
Leaf, Inc.	Robinson, IL	Candy	Exp.	200	20	–	EI Assoc.	Const.
Lucks, Inc.	Seagrove, NC	Canned veg. & meats	Exp.	–	1.5	–	–	–
M								
Malt-O-Meal	Northfield, MN	Breakfast cereal	Exp.	30	2.5	–	–	Comp. Feb.
Mama Tish's Ital. Spec.	Chicago, IL	Italian ice	Renov.	50	–	–	A. Epstein & Sons, Int'l.	Const.
Marietta's Bakery	Marietta, OK	Cookies	Exp.	60	–	–	–	–
McCarty Farms	Canton, MS	Chicken	New	50	8	150	–	–
McCarty Farms	Vicksburg, MS	Poultry	New	100	10	200	Facility Engrs.	Stup. July
McCarty Processors	Forest, MS	Broilers	New	–	–	201	–	–
Meadow Gold	Huntsville, AL	Milk products	Exp.	–	1	–	–	–
Mid-American Dairyman	Pollock, SD	Cheese	Exp.	–	1	–	–	–
Mi Rancho Tortillas	Clovis, CA	Tortillas	New	28	3	–	–	Const. '91
Monfort, Inc.	Saint Joseph, MO	Pork processing	Exp.	–	3	225	–	–
Montaintop Baking	Pikeville, KY	Baked products	New	275	–	600	–	Stup. '91
Mountaire	Selbyville, DE	Poultry processing	Exp.	–	18	300	–	–
MPS	Omaha, NE	Meat processing	New	–	54.9	320	–	–
Mrs. Baird's Bakeries	Fort Worth, TX	Bread	New	130	–	125	–	Const.'91
Ms. Desserts	Baltimore, MD	Gourmet desserts	New	56	–	160	J. Knott, Inc.	Stup. 7/90
Musco Olive Products	Tracy, CA	Olives	Exp.	32	4	40	Foodpro Int'l.	Stup. April
N								
Nardone Brothers Baking Co.	Wilkes-Barre, PA	Pizza	New	50	2.7	74	–	Comp. Sept.
Nash Johnson	Rose Hill, NC	Turkey feed	New	–	–	–	Younglove	Const.
Nestle's	Ontario, CA	Chocolate products	New	157	2	–	–	–
Nichii Co.	Jefferson, IA	Soybean flake	New	–	–	–	Austin Co.	Const.
Normac Foods	Oklahoma City, OK	Processed products	Exp.	123	21	50	Webber/Smith	Stup. Nov.
O								
Ocean Spray	Bordentown, NJ	Cranberry prod.	Renov.	–	1	–	EI Assoc.	Ping.
Odwalla Fruit Juice	Dinuba, CA	Fruit juice	New	100	3.5	50	–	–
Ore-Ida Foods	Pocatello, ID	Frozen entrees	Renov.	80	–	–	Webber/Smith CH_2M Hill	Comp. March
Oscar Mayer	Madison, WI	Meat prod.	Exp.	30	1.5	–	St. Onge, Ruff	Const.
Oscar Mayer	Sherman, TX	Dist. cooler	New	78	–	–	Haskell Co.	Comp. Aug.

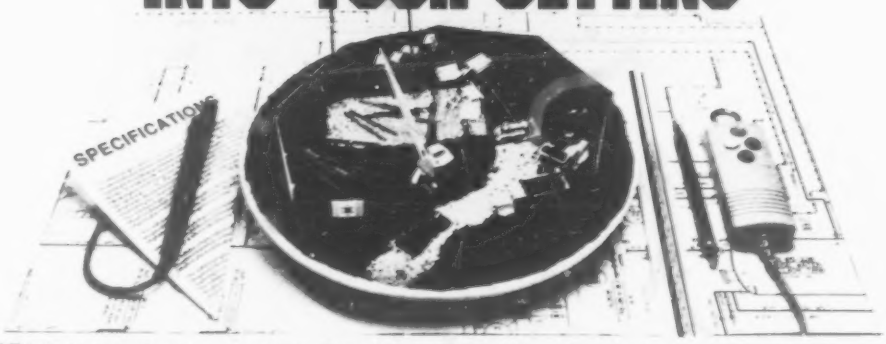
NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Emp. ees	Architects/ ngineers	Status & Date
P								
Pennfield Corp.	Farmville, VA	Poultry processing	New	170	40	500	–	–
Pepperidge Farm	Adamstown, PA	Bakery prod.	New	600	180	800	Day & Zimmermann	Stup. '91
Pepsi-Cola	Atlanta, GA	Soft drinks	Renov.	–	10	–	Lockwood Greene	Plning.
Pepsi-Cola	Piscataway, NJ	Soft drinks	New	270	–	–	–	–
Perdue Farms	Eagle Springs, NC	Hatchery & poultry	Exp.	35	3	–	–	–
Petit Jean	Buffalo, MO	Poultry processing	Exp.	–	–	75	–	–
Petit Jean Poultry	Stilwell, OK	Chicken processing	Exp.	–	–	100	–	–
Petit Jean Poultry	Arkadelphia, AR	Chicken processing	New	–	–	380	–	Comp. Feb.
Picowave Processing	Nogales, AZ	Food processing	New	50	35	120	–	–
Pierre Frozen Foods	Cincinnati, OH	Meat & poultry processing	Exp.	25	12	50	–	Comp. Sept.
Pillsbury Co.	New Albany, IN	Dough products	Exp.	-	10	65	–	–
Pinahs Company	Pewaukee, WI	Snack foods	New	–	–	–	–	–
Price Chopper	Schenectady, NY	Dist. ctr.	Exp.	28	2	–	St. Onge, Ruff & Assoc.	Const.
Prime Quality Catfish Feeds	Moorhead, MS	Catfish feed	New	–	4	–	–	–
PVO Foods	Granite City, IL	Margarine & oil	New	60	3.5	110	–	–
Q								
Quibell Corp.	Roanoke, VA	Bottled water	Exp.	–	–	65	–	–
R								
Raley's	Sacramento, CA	Liquor, perish.	New	280	–	–	Food Plant Engineering	Stup. Dec.
Red Hook Ale Brewery	Seattle, WA	Beer	New	–	18	–	–	–
Richmond Cold Storage	Smithfield, VA	Refrig. warehouse	New	40	–	–	Stellar Group	–
Russell Stover Candies	Brownstown, IN	Candy	New	92	4.6	40	–	Comp. April
Ruiz Food Products	Dinuba, CA	Froz. Mex. foods	New	200	15	900	Paylor Group Response Design	Stup. March
S								
S.K. Foods	Lemoore, CA	Tomatoes	New	90	12	110	Foodpro Int'l.	Comp.
S.R. Simplot	Aberdeen, ID	French fries	Exp.	65	–	–	Webber/Smith	Comp.
Sanderson Farms	McComb, MS	Chicken proc.	New	100	12	325	–	Stup. Sept.
Sandridge Gourmet	Medina, OH	Salads	Exp.	29	–	–	Webber/Smith	Stup. April
Sara Lee Corp.	Tupelo, MS	Food processing	New	280	2	100	–	–
Sau-Sea Foods	Yonkers, NY	Frozen seafood	Exp.	–	1.5	–	–	–
Savanah Foods	Fremont, OH	Sugar	Exp.	–	–	–	PSI	Comp. 9/90
Scrivner, Inc.	Buffalo, NY	Dairy prod.	Renov.	23		–	Webber/Smith	Stup. May
Smith's Food & Drug	Tolleson, AZ	Dist. ctr.	New	1.1	–	–	A. Epstein & Sons, Int'l.	Const.
Smith's Food & Drug	Layton, UT	Ice cream/yogurt	New	155	–	–	Webber/Smith	Comp. 9/90
Southeastern Specialty Foods	Ellisville, MS	Fruit juices	Exp.	75	3	–	–	March 1991
Southern Hens	Moselle, MS	Processed poultry	New	85	10	175	Davy McKee	Comp. Aug.
Southern Pride Catfish Co.	Greensboro, AL	Catfish processing	Exp.	–	–	85	–	–
Stadlers Country Hams	Elon College, NC	Country hams	Exp.	70	–	–	–	–
Stefano's Food Products	Huntington, NY	Ital. spec. foods	Exp.	–	2	–	–	–

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
Steuben	Buffalo, NY	Cultured prod.	Renov.	–	–	–	Hixson	Pining.
Stokely USA	De Forest, WI	Canned vegetables	Exp.	250	2.8	–	–	–
Strongheart Products	Frontenac, KS	Dog food	New	–	–	50	–	–
Sunland	Portales, NM	Peanut butter	Exp.	–	–	55	–	–
Sunshine Dairy	Portland, OR	Yogurt	Renov.	22	–	6	JAI Engineers	–
Sysco Corp.	Dallas, TX	Dist. ctr.	Renov.	90	–	–	Webber/Smith	Comp. 12/90
T								
Trauth	Newport, KY	Dairy	Exp.	30	–	–	Hixson	Pining.
Travis Meat	Powell, TN	Meat processor	Exp.	–	1.5	–	–	–
Tropicana Products	Jersey City, NJ	Dist. ctr.	New	210	68	–	Sverdrup	–
Tropicana Products	Bradenton, FL	HQ/processing	Exp.	–	–	–	Stellar Group	–
Tropicana Products	Ontario, CA	Juice processing	Exp.	100	–	–	Stellar Group	–
Turkey Hill Dairy	Conestoga, PA	Ice cream	Renov.	–	–		JAI Engineers	Const.
Tyson Foods	Shelbyville, TN	Poultry processing	Exp.	–	4.5	–	–	–
U								
U.S. Cold Storage	Tulare, CA	Refrig. Warehouse	New	100	–	–	Stellar	–
U.S. Cold Storage	Laredo, TX	Refrig. Warehouse	New	150	–	–	Stellar	–
U.S. Cold Storage	Nashville, TN	Refrig. Warehouse	New	40	–	–	Stellar	–
United Refrigerated	Atlanta, GA	Refrig. Warehouse	New	150	–	–	Stellar	–

BUILD MORE PROFIT INTO YOUR SETTING



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NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost ($ millions)	Employees	Architects/ Engineers	Status & Date
V								
Van den Bergh Foods	Thorofare, NJ	Baked goods	Exp.	25	–	–	Webber/Smith	Plning.
Ventre Packing Co.	De Witt, NY	Pasta & sauces	Exp.	80	1	–	–	–
W								
Wagner's Milk Prod.	Weyauwega, WI	Cheese, whey	–	2	2.3	–	Westia Const.	Stup. May
Ward's Cheese	Gooding, ID	Cheese	Exp.	43	–	–	Mead & Hunt	Const.
Warner-Lambert	Morris Plains, NJ	Candy	Exp.	45	5	–	El Assoc.	Const.
Washington Frontier Juice	Prosser, WA	Grape proc.	New	40	12	55	–	Stup. '91
Wegman's Food Mkt.	Rochester, NY	Food dist.	New	98	–	50	St. Onge, Ruff & Assoc.	Comp. Sept.
Westpac Pacific Foods	Lathrop, CA	Dis. ctr.	New	650	–	–	Food Plant Engineering	Stup. June
West Texas Ethanol	Clovis, NM	Flour	Exp.	–	–	54	–	–
Winn Dixie	Hammond, LA	Dist. ctr.	New	580	–	–	Stellar Group	–
Wisconsin Dairies Coop.	Milan, WI	Cheese	Exp.	34	–	–	Mead & Hunt	Comp. Oct.
Wisconsin Dairies Coop.	Waumandee, WI	Cheese	Exp.	10.6	–	–	Mead & Hunt	Comp. Oct.
Wortz Co.	Poteau, OK	Cookies & crackers	Exp.	64	–	100	–	
Z								
Zacky Farms	Traver, CA	Feed	New	–	–	–	Younglove	Stup. March

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3) Measures complete empty-full-empty or full-empty-full cycles of the balance tank with printout of individual cycle times and mean and median averages.

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